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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 25581-2010

**National food safety standards of food additives potassium
ferrocyanide (potassium ferrocyanide)
(English Translation)**

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Foreword

Appendix A of this standard is a normative appendix.

National Food Safety Standard Food additive potassium ferrocyanide (potassium ferrocyanide)

1 Scope

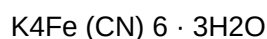
This standard applies to food additive potassium ferrocyanide (potassium ferrocyanide).

2 Normative references

The standard file referenced in the application of this standard is essential. For dated references, only the edition date of the note this applies to this standard. For undated references, the latest edition (including any amendments) applies to this standard.

3 Formula and relative molecular mass

Formula 3.1



3.2 Relative molecular mass

422.41 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Pale yellow color take appropriate sample is placed in a beaker 50mL watch in natural light Observing the color and texture. State organization crystalline particles or powder

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Potassium ferrocyanide $[K_4Fe(CN)_6 \cdot 3H_2O]$, w /% ≥ 99.0
 Appendix A A.4 Chloride (Cl dollars), w /% ≤ 0.3 A.5 in Appendix A Water-insoluble, w /% ≤ 0.02 A.6 in Appendix A Sodium (Na), w /% ≤ 0.2 A.7 Appendix A Arsenic (As)/(mg/kg) ≤ 1 Appendix A A.8 Cyanide by examining Appendix A, A.9 Hexacyanoferrate (III) salt by test A.10 in Appendix A Appendix A (Informative) Testing method A.1 Warning Reagents and samples of the standard test methods use toxic or corrosive, the operation should be cautious as splashed on skin should immediately wash with water, severe cases should be treated immediately.

A.2 General Provisions the standard test methods used in the reagents and water in the absence of other specified requirements, refer to analytically pure reagents and GB/T 6682-2008 Three water regulations. Impurities used in the test standard solution, preparations and products, did not indicate when the other requirements, according to HG/T 3696.2, HG/T 3696.3 regulations of preparation.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 ammonia.

A.3.1.2 perchloric acid solution. 110.

A.3.1.3 sulfuric acid solution. 18.

A.3.1.4 sodium hydroxide solution. 10g/L.

A.3.1.5 ferric chloride solution. 5g/L.

A.3.2 Analysis step

A.3.2.1 Identification of ferrocyanide Take 10mL10g/L of the sample solution, ferric chloride solution was added 1mL generated dark blue precipitate was filtered and the filtrate make the following experiment.

Take the above filtrate was neutralized with ammonia water to neutral, and concentrated to one-third, add 2 drops of perchloric acid solution that is a white precipitate, hydroxide Soda solution or water insoluble, can be dissolved in sulfuric acid solution.

A.3.2.2 Identification of potassium ions Take a platinum wire wetted with hydrochloric acid, the colorless to colorless flame, burning the sample dipped in a colorless flame, fire in cobalt glass Flame was purple.

A.4 Determination of potassium ferrocyanide A.4.1 Method summary in acidic medium, with zinc sulfate standard titration solution titrated with hexacyanoferrate acid tripotassium and diphenylamine as indicator for the end of mixing.

A.4.2 Reagents and materials A.4.2.1 sulfuric acid solution. 18.

A.4.2.2 hexacyanoferrate acid tripotassium solution. 10g/L (using now).

A.4.2.3 ammonia - ammonium chloride buffer solution (A). pH~10.

A.4.2.4 disodium edetate (EDTA) standard titration solution. $c(\text{EDTA}) = 0.03\text{mol/L}$.

A.4.2.5 zinc sulfate standard titration solution. $c(\text{ZnSO}_4) = 0.03\text{ mol/L}$;

Preparation and calibration. weigh 9.0g zinc sulfate heptahydrate dissolved in water 1000mL, shake. Pipette 30.00mL ~ 35.00mL preparation Good zinc sulfate solution and placed in 250mL conical flask, add 70mL water, 10mL ammonia - ammonium chloride buffer solution, add 5 drops of chrome black T directions Washed with disodium edetate (EDTA) titration standard solution titration solution from purple to pure blue. Make a blank test simultaneously.

Blank test. Measure 100mL ~ 105mL of water, placed in 250mL conical flask, add 10mL ammonia - ammonium chloride buffer solution (A), from "Add 5 drops of chrome black T indicator solution" Start with the calibration while the same operation.

Zinc sulfate (ZnSO_4) standard titration solution concentration c by the formula (A.1) Calculated.

cV_V

c_{101}

Where.

Numerical standard titration solution volume V_1 -- titration zinc sulfate solution consumed edetate disodium (EDTA), in units of milli L (mL of);

Numerical standard titration solution volume V_0 -- titrate blank solution consumed edetate disodium (EDTA), milliliters (ML of);

c_1 -- disodium edetate (EDTA) Standard Solution accurate value in units of moles per liter (mol/L);

Pipette value V -- zinc sulfate solution volume in milliliters (mL).

A.4.2.6 chrome black T indicator solution. 5g/L.

A.4.2.7 diphenylamine indicator solution. 10g/L.

The 1g diphenylamine was dissolved in 100mL of concentrated sulfuric acid.

A.4.3 Analysis step

Weigh about 5g samples, accurate to 0.000 2g, set 500mL flask, dissolved in water and diluted to the mark. This solution as the test solution A, this solution is used potassium ferrocyanide, chloride, cyanide and hexacyanoferrate (III) salts measurement and testing.

Pipette 25.00mL test solution A, placed in 500mL conical flask, add 20mL sulfuric acid solution, 3 drops to 5 drops of diphenylamine indicator solution, 3 drops to 5 drops hexacyanoferrate acid tripotassium solution, add water to 100mL, under vigorous stirring, zinc sulfate standard titration solution titration solution from yellow to green to blue to purple end.

A.4.4 Calculation Results Potassium ferrocyanide to potassium ferrocyanide $[K_4Fe(CN)_6 \cdot 3H_2O]$ mass fraction w_1 and its value is expressed in%, according to formula (A.2) Calculated.

$$() 01000500251 \text{ xxx} = m V c M_w \text{ (A.2) where.}$$

Numerical zinc sulfate standard titration V -- titration solution consumed volume in milliliters (mL);

Accurate c -- zinc sulfate standard titration solution concentration value in units of moles per liter (mol/L);

Numerical m -- sample mass, expressed in grams (g);

Numerical M -- potassium ferrocyanide $[2/3K_4Fe(CN)_6 \cdot 3H_2O]$ molar mass in grams per mole (g/mol) ($M = 281.6$).

Take the arithmetic mean of the parallel determination results of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.3%.

A.5 Determination of chloride A.5.1 Reagents and materials with GB/T Chapters 4 and zinc nitrate solution in 3051-2000. 150g/L.

A.5.2 Instruments and Equipment with GB/T 3051-2000 of Chapter 5.

A.5.3 Analysis step

With 100 mL pipette twice totaling 200.00 mL test solution A (A.4.3), placed in 250 mL volumetric flask, add nitric acid Zinc solution to the mark. Place stratified, with a slow dry filter paper, discard the initial filtrate, Pipette 100mL filtrate was placed in 300mL Erlenmeyer flask, add 3 drops of bromophenol blue indicator solution, nitric acid solution was dropped to just yellow, then 5 drops of excess. Add 1mL diphenylcarbazone hydrazide Indicator solution, the use of micro-burette with 0.05mol/L nitrate mercury standard titration solution titration solution from yellow to purple.

Blank test. 100mL water is placed 300mL conical flask, from "add 3 drops of bromophenol